

Bushfire Management Plan

Stages 38 and 39 Trinity Estate, Alkimos



Prepared for:
Northern Corridor Developments Ltd

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Stages 38 and 39, Trinity Estate, Alkimos Bushfire Management Plan

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Version

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1. Background Information

Northern Corridor Developments Ltd commissioned Surefire Environmental Pty Ltd (Surefire Environmental) to prepare an updated Bushfire Management Plan (BMP) to support the development application that is being prepared for Stages 38 and 39 of the Trinity Estate (the Site, Stages 38 and 39), Alkimos, within the City of Wanneroo (Figure 1). The Site forms part of a larger development for Trinity Estate. The broad aim of the assessment process associated with preparation of the BMP was to identify potential bushfire risk to future properties and their management when building construction occurs.

1.1 Location

The Site is located within the City of Wanneroo (Figure 2), and is:

- approximately 40 km northwest of the Perth Central Business District
- approximately 7.3 ha, comprising 124 residential Lots of varying sizes
- the area of interest is bounded by Montana Park and what will become Howden Pde to the north, Leatherback Bvd to the northwest, Hawksbill Dr to the south, along with existing and planned development to the east, south, and west (Figure 2).

1.2 Bushfire Prone Status

Portions of Stages 38 and 39 are located within a bushfire prone area as designated by the Fire and Emergency Services Commissioner, Office of Bushfire Risk Management (OBRM), within the Department of Fire and Emergency Services (2024) (Figure 3). Accordingly, there is a requirement for landowners to undertake an assessment to determine the risks and identify appropriate management strategies such that the development does not increase the inherent bushfire risk. Portions of the site that are located within 100 m of vegetation designated as being bushfire prone necessitate the need for a bushfire attack level assessment (BAL-assessment) and assigning a BAL-rating that will determine appropriate construction standards as per *AS 3959:2018 Construction of Buildings in Bushfire Prone Areas (AS 3959:2018)*.

The BAL assessment component of this document considers current and projected site conditions (i.e. vegetation classification pre- and post-development), along with

the provisions of *State Planning Policy 3.7 Bushfire (SPP3.7)* (Department of Planning, Lands and Heritage (DPLH)), and the Western Australian Planning Commission (WAPC) (2024) and *Planning for Bushfire Guidelines for the Implementation of State Planning Policy 3.7 Bushfire (the Guidelines)* (Department of Planning, Lands and Heritage and the Western Australian Planning Commission, 2024).

1.3 Aims and Objectives

The aim of this BMP is to outline the bushfire management methods and requirements that will be implemented within the proposed subdivision. Accordingly, broad aims include:

- reduce the occurrence of and minimise the impact of bushfire to the life and property of future residents and the environment
- allow easy access for firefighters if a bushfire does occur
- protect the landscape within the Site as far as is possible
- document bushfire prevention requirements of the area to which it relates.

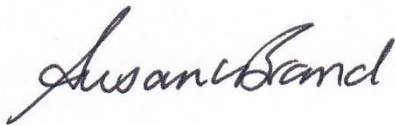
The objectives of this Bushfire Management Plan are to:

- define land use areas and values within Stages 38 and 39, with Stages being developed as urban residential Lots, with the planned POS and drainage basin within the Site boundary being engineered during Stage 37 civil engineering works
- define and assess the bushfire hazard according to the various vegetation classifications present
- outline the roles and responsibilities of individuals and organisations in relation to bushfire management as it relates to Stages 38 and 39
- document bushfire management strategies for the subdivision, taking into consideration:
 - vegetation to be retained to the north in Montana Park across what will become Howden Pde (Figure 1)
 - the need for additional building construction standards where vegetated patches interface with the urban development
 - document the performance criteria and acceptable solutions adopted for the Site.

1.4 Document Preparation

Sue Brand (Surefire Environmental), an accredited Level 2 Bushfire Planning and Design (BPAD) practitioner with the Fire Protection Association Australia, has prepared this document. Activities involved with its preparation included:

- assessing the vegetation type and class present within and adjacent to the proposed development site using descriptions provided in *AS 3959:2018*
- determining BAL-ratings for each Lot located within 100 m of any classified vegetation, based on currently available information
- suggesting management strategies that will be implemented during the development process based on current and projected site considerations.



Signed:

Date: 24 February 2025

Accreditation Number: BPAD36638

Accreditation Expiry Date: 30 April 2025



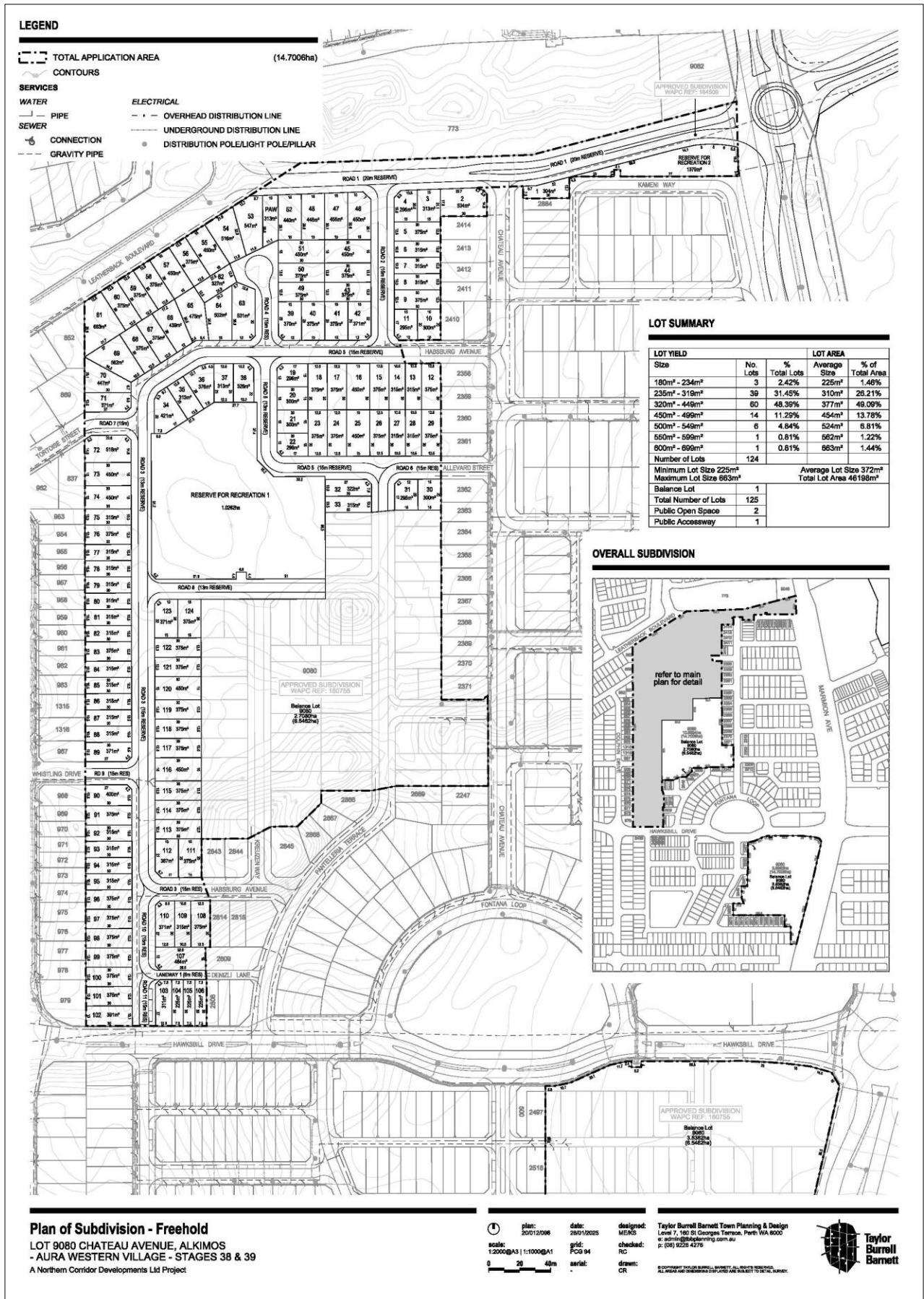
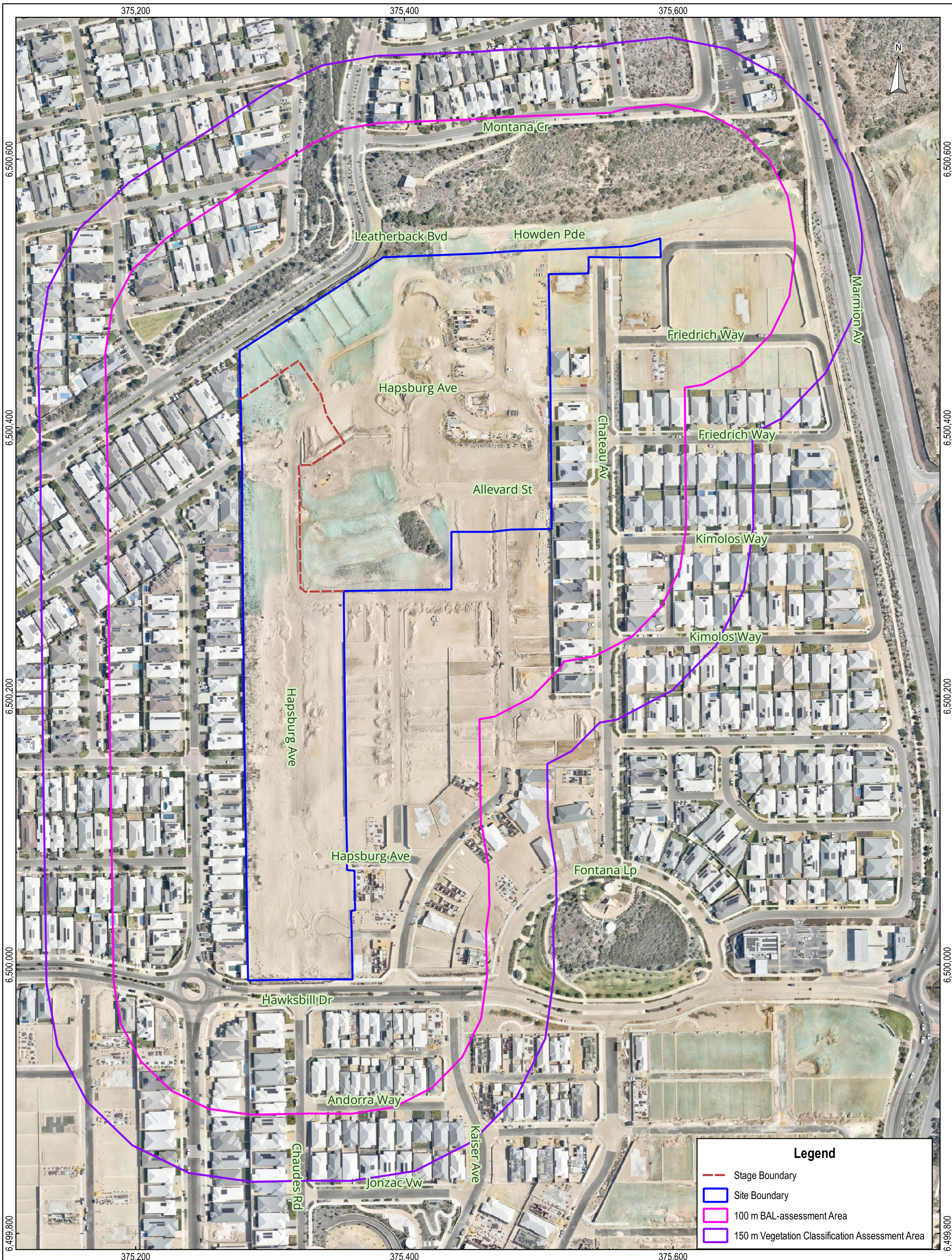


Figure 1: Proposed Subdivision Area



Legend

- - - Stage Boundary
- ▭ Site Boundary
- ▭ 100 m BAL-assessment Area
- ▭ 150 m Vegetation Classification Assessment Area

Scale: 1: 2,500
 Original Size: A3
 Aerial Imagery: NearMap December 2024
 Grid: GDA94 / MGA zone 50 (EPSG:28350)

0 50 100 m

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Figure 2
Location

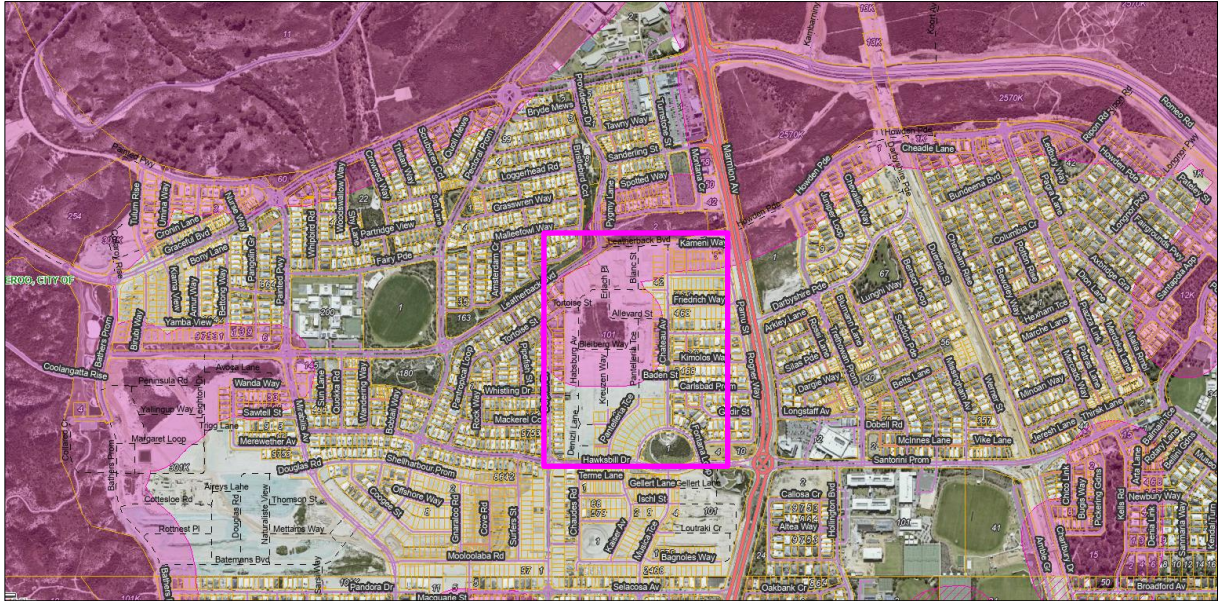


Figure 3: Site Bushfire Prone Status (OBRM, 2024)

Bushfire Prone Area 2

2. Environmental Considerations

Environmental considerations were assessed in earlier planning phases, noting that these development stages are Stages 38 and 39, with several more still to be developed.

2.1 Regional Context

Perth is located within the Swan Coastal Plain region of the Interim Biogeographical Regionalisation of Australia (IBRA). The Swan Coastal Plain comprises of two major divisions, namely Swan Coastal Plain 1 – Dandaragan Plateau and Swan Coastal Plain 2 – Perth Coastal Plain. The Site is in the Perth Coastal Plain subregion, which is broadly characterised as including areas of Jarrah and Banksia woodlands on sandy soils in a series of sand dunes, along with wetland areas, often within the interdunal swales (Mitchell, Williams, and Desmond, 2002).

2.2 Environmental Considerations

As Stages 38 and 39 is cleared of all vegetation, within its boundaries there are no:

- Bush Forever sites, with the closest being *Bush Forever Site 397 Coastal Strip from Wilbinga to Mindarie* more than 1 km to the east.
- wetlands or waterways, with the closest wetlands being Carabooda Lake more than 3 km to the east.
- conservation significant ecological communities, flora, or fauna species.

2.3 Native Vegetation – Modification and Clearing

Stages 38 and 39 are currently cleared of vegetation except for a small stand of trees that will be retained in the POS area that was engineered during Stage 37 civil engineering works (Figure 4). Classified vegetation retained in Montana Park to the north will be retained on an ongoing basis and represents the source of the bushfire threat to some Lots within Stage 39 (OBRM, 2024; Figure 3).



Figure 4: Current Land Use

2.4 Revegetation

No revegetation will occur within the Stages 38 and 39 boundaries.

2.5 Landscaping

One POS and drainage area of approximately 1 000 m² that will be created adjacent to Allevard St will comprise a drainage basin, parkland areas, and a small stand of trees (approximately 600 m²). As the drainage basin and parkland areas will meet the definition of low threat vegetation, it will be subject to Exclusion Clause 2.2.3.2 (f) of *AS 3959:2018*.

3. Bushfire Assessment Results

This section outlines the outcomes of the bushfire assessment process.

3.1 Broader Landscape Assessment

As Stages 38 and 39 is located within an area designated as Area 2 on the Map of Bushfire Prone Areas (OBRM, 2024) (Figure 3), a broader landscape assessment (BLA) was required. Using the point scoring system included in Table 3 of Appendix A.1 Broader Landscape Assessment of the Guidelines, a simplified BLA was undertaken, with a summary of results provided in Table 1 and shown in Figure 1, Figure 2, and Figure 3.

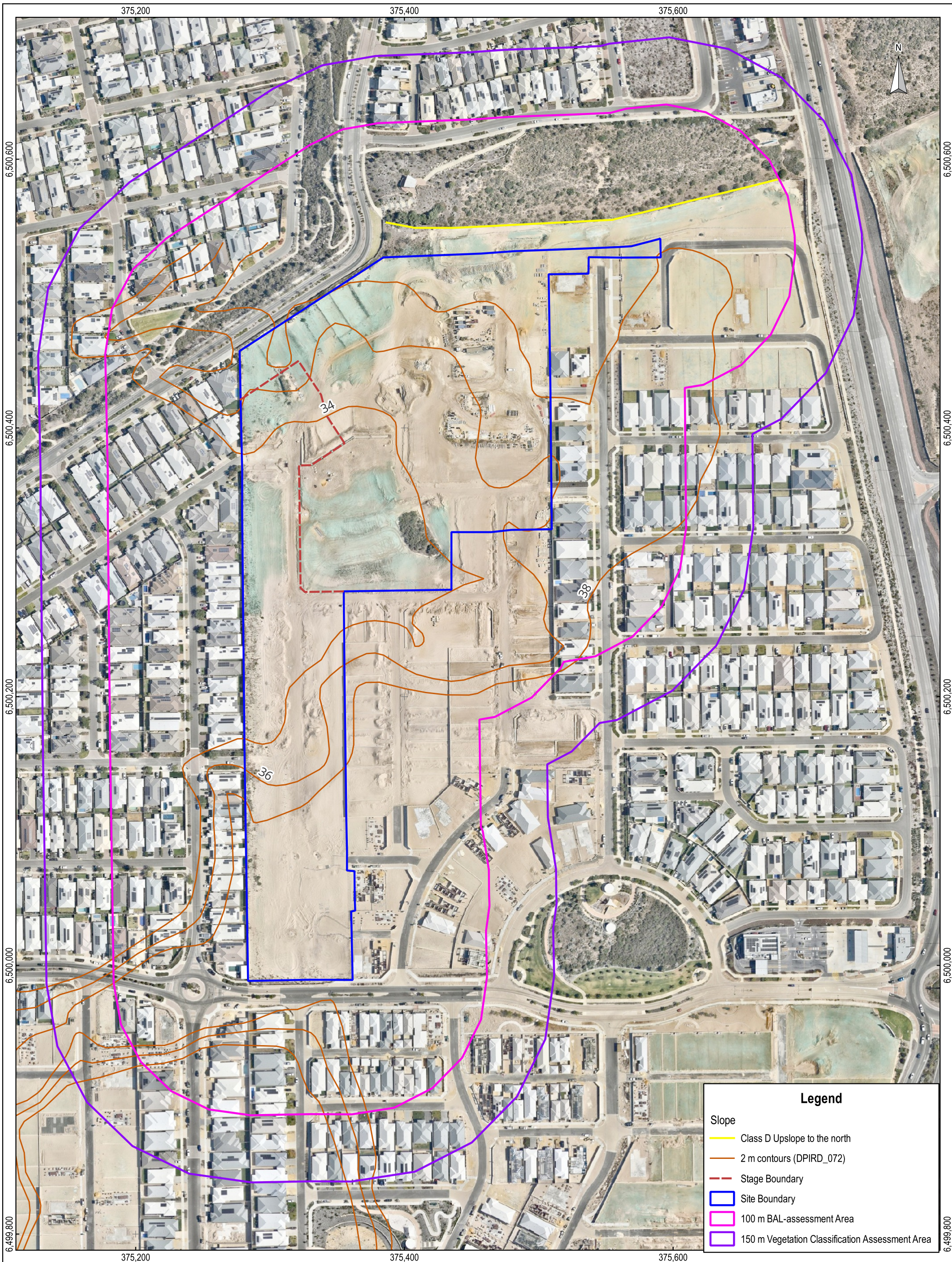
Table 1: Simplified BLA Assessment and Justifications

Criteria	Points	Justification
Proximity of the planning proposal to a suitable destination is < 1 km .	1	The planning proposal is in an area where there is an approved Structure Plan, with existing development to the north of Leatherback Ave and Montana Park, to the west of the Trinity Site, as well as previous Stages to the east and across Marmion Ave. Development is progressing in other Stages of the Trinity site to the east and south.
The road pattern from the planning proposal to a suitable destination is simple and/or direct (limited intersections) .	1	The road pattern is simple, with all planned Lots facing a distributor road that connects to the planned road network in both a north-south and an east-west direction, several connecting with Chateau Ave and Habsburg Ave and which lead to Hawksbill Dr to the south (Figure 1). When constructed, Howden Pde will provide access to Marmion Ave to the east, as does Hawksbill Dr (Figure 1).
The predominant vegetation pattern is cleared vegetation (e.g. clearing for residential zoned urban lots) .	1	The predominant vegetation pattern is cleared vegetation based on the existing approved Structure Plan, with the only classified vegetation within 100 m of the site being that located in Montana Park to the north of what will become Howden Pde (Figure 1, Figure 2).

Criteria	Points	Justification
Exposure of the planning proposal to an identified external bushfire hazard (excluding Class G Grassland) is from nil or one aspect only .	1	The exposure of the planning proposal to an identified external bushfire hazard is one based on the existing approved Structure Plan and the retention of vegetation within Montana Park to the north of what will become Howden Pde (OBRM, 2024; Figure 3).
Total Points	4	Broader Landscape Type A

3.2 Contours and Slope

The coastal aspect of the Site means that it rises from the west from an interdunal swale at a height of 26 m Australian Height Datum (AHD) to a minimum of 50 m AHD near Marmion Ave. The Site also rises towards the north as result of a dune that is vegetated with Class D Scrub in Montana Park, meaning the classified vegetation that influences BAL-ratings on the Site is upslope and this is the slope that has been applied for the BAL-assessment process (Figure 5).



Legend	
Slope	
	Class D Upslope to the north
	2 m contours (DPIRD_072)
	Stage Boundary
	Site Boundary
	100 m BAL-assessment Area
	150 m Vegetation Classification Assessment Area

Scale: 1: 2,500
 Original Size: A3
 Aerial Imagery: NearMap December 2024
 Grid: GDA94 / MGA zone 50 (EPSG:28350)

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Figure 5
Contours and Slope

3.3 Vegetation Classification

Vegetation on and within 150 m of the Site was assessed during the several visits to the Site, with the most recent being 18 January 2025, using descriptions provided in Table 2.3 and Figure 2.4 of *AS 3959:2018*. Each vegetation class is discussed and shown in Figure 6, Figure 7, Figure 8, and Figure 9. The pre-development vegetation classification for the Site is provided in Figure 10, with the expected post-development classification shown in (Figure 11).

3.3.1 Patch 1: Class D Scrub

Class D Scrub is characterised by shrubs from 2 – 4 m with a continuous canopy from ground level; this vegetation class may include the occasional taller tree. A patch of Class D Scrub is present in Montana Park to the north of the subdivision (Figure 6). As this vegetation will be retained in the longer term it represents an ongoing bushfire hazard to the Site.

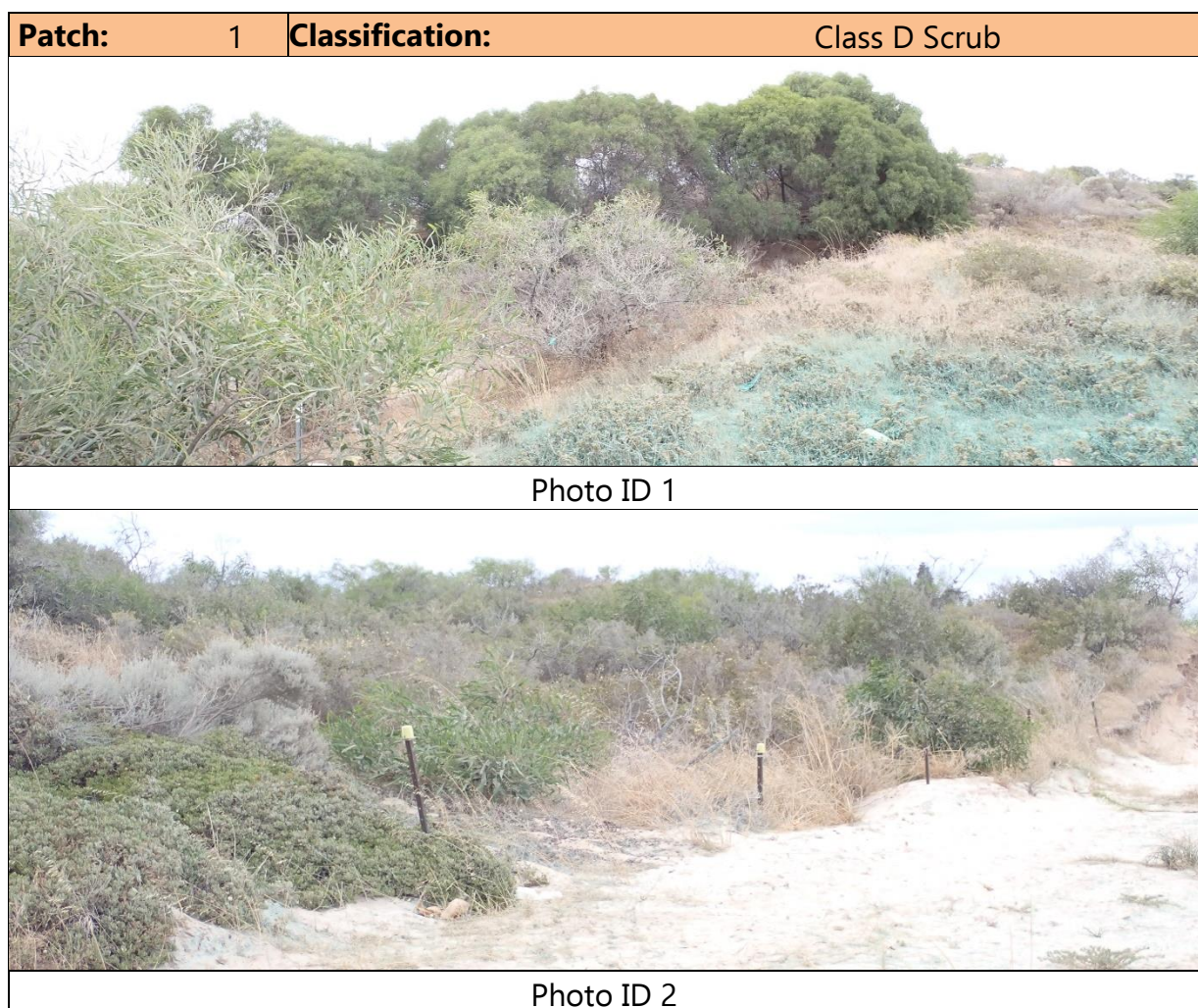


Figure 6: Class D Scrub

3.3.2 Patch 2: Class C Shrubland

Class C Shrubland is characterised by shrubs to 2 m with a continuous canopy from ground level. There is one patch of Class C Shrubland present within 100 m of the Site, however, it is located to the north of the Class D Scrub within Montana Park facing Montana Cr some 40+ m from the Site (Figure 7). This patch will have little influence on BAL-ratings as they will be determined by the Class D Scrub that is closer to Lots within the development area. Another patch Class C Shrubland is located to the north across Montana Cr and is more than 100 m from the Site boundary, thus will not influence BAL-ratings (Figure 7).

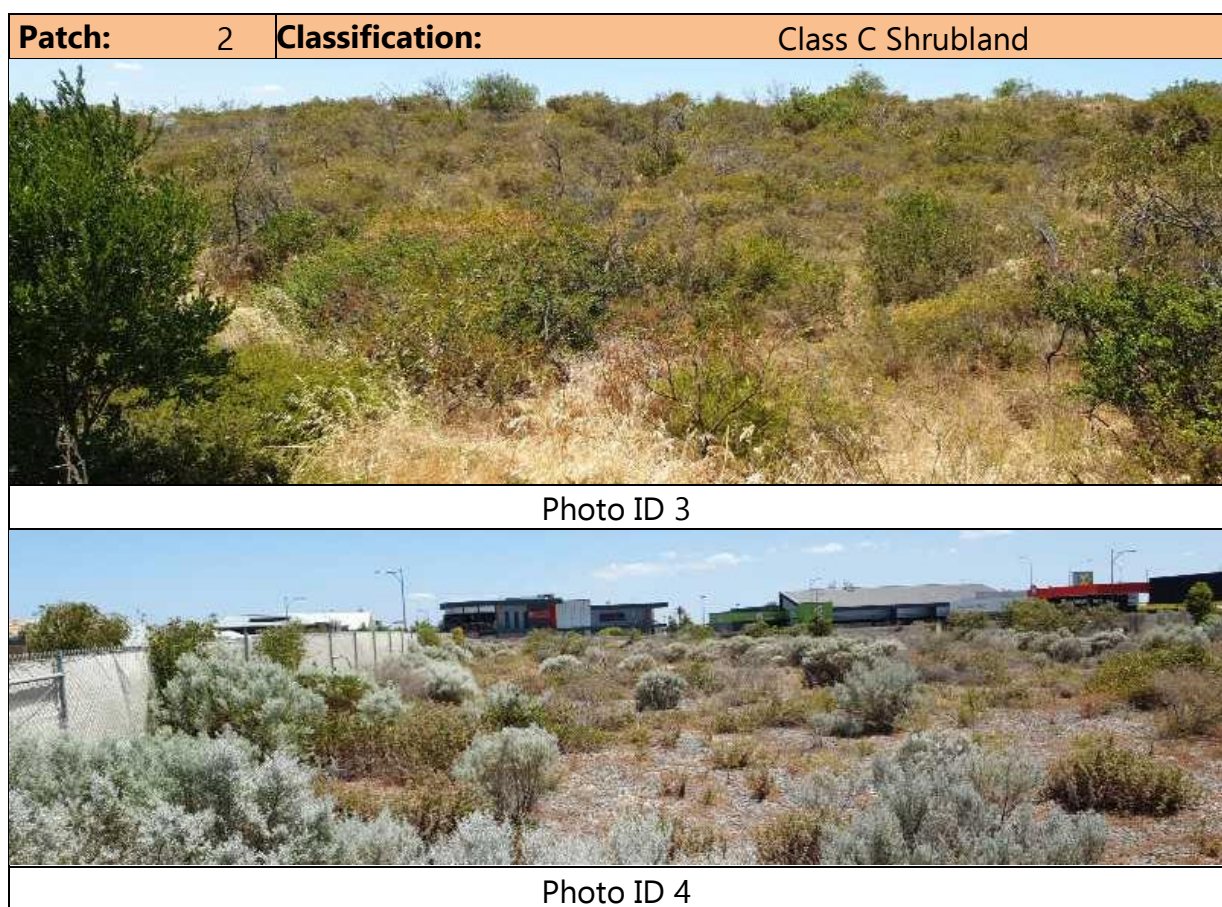


Figure 7: Class C Shrubland

3.3.3 Low Threat Vegetation

Vegetation may be considered low threat due to characteristics including flammability, moisture content, or flammability, with examples including management parkland/reserve areas, grassland maintained in a minimal fuel load through cropping to 20 cm or less, market gardens, orchards, and playing fields; these locations are subject to Exclusion Clause 2.2.3.2 (f).

Low threat vegetation subject to Exclusion Clause 2.2.3.2 (f) is present in the POS areas associated with Montana Park and managed road verge areas along Leatherback Blvd (Figure 8). When landscaped, it will also include the POS area adjacent to Allevard St. Currently, the Allevard St POS is cleared of all vegetation except for a stand of approximately 600 m² that will be retained, with the drainage basin to be planted such that it also meets the definition of Exclusion Clause 2.2.3.2 (f), and the remainder landscaped with turfed and play areas.



Photo ID 5



Photo ID 6



Photo ID 7

Figure 8: Low Threat Vegetation

3.3.4 Patch 4: Non-vegetated Areas

Non-vegetated areas are subject to exclusion clause 2.2.3.2 (e) of *AS 3959:2018*, with those within and close to the Site including (Figure 9):

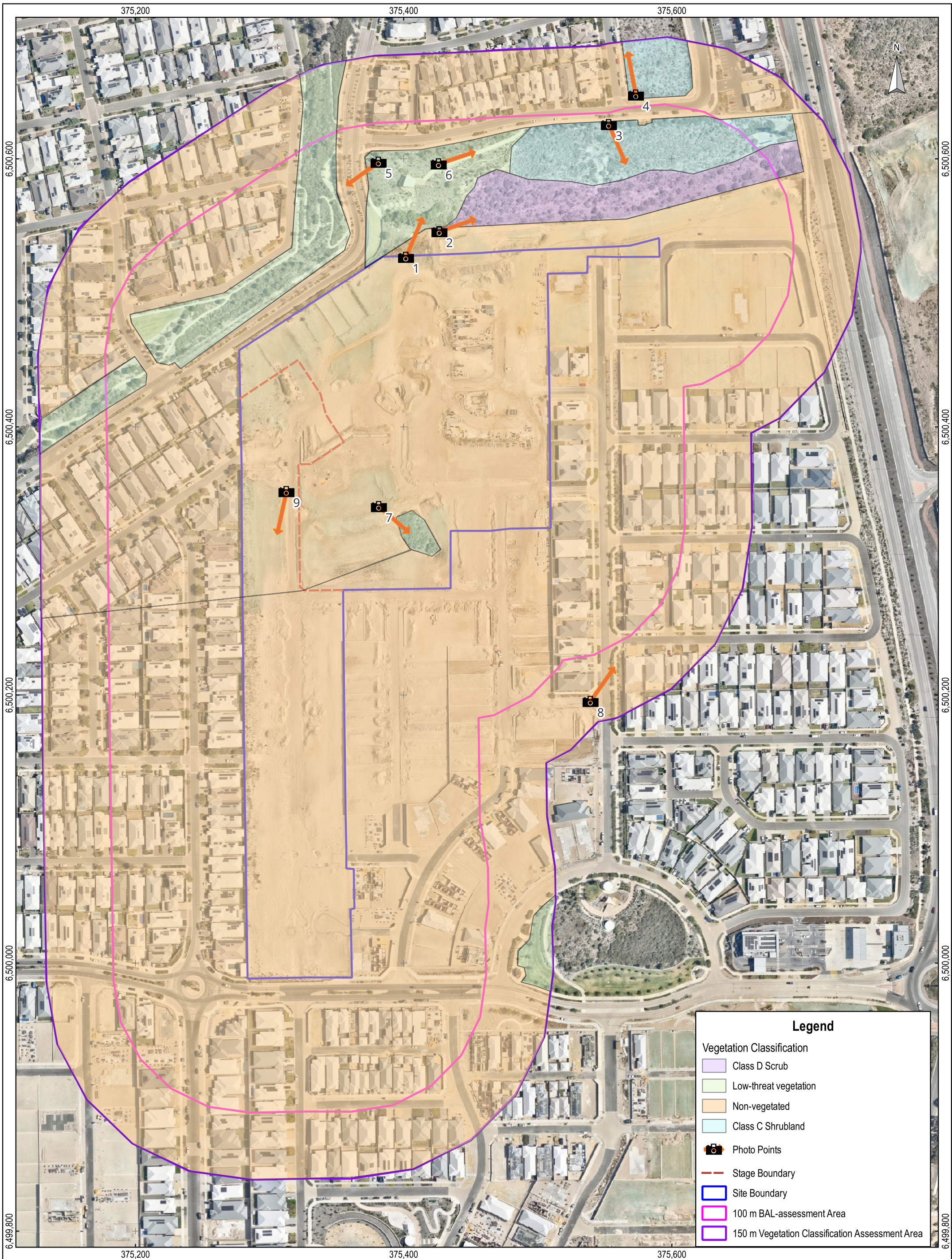
- roads and footpaths
- land cleared of vegetation ahead of civil engineering works
- existing development in preceding development stages.





Photo ID 9

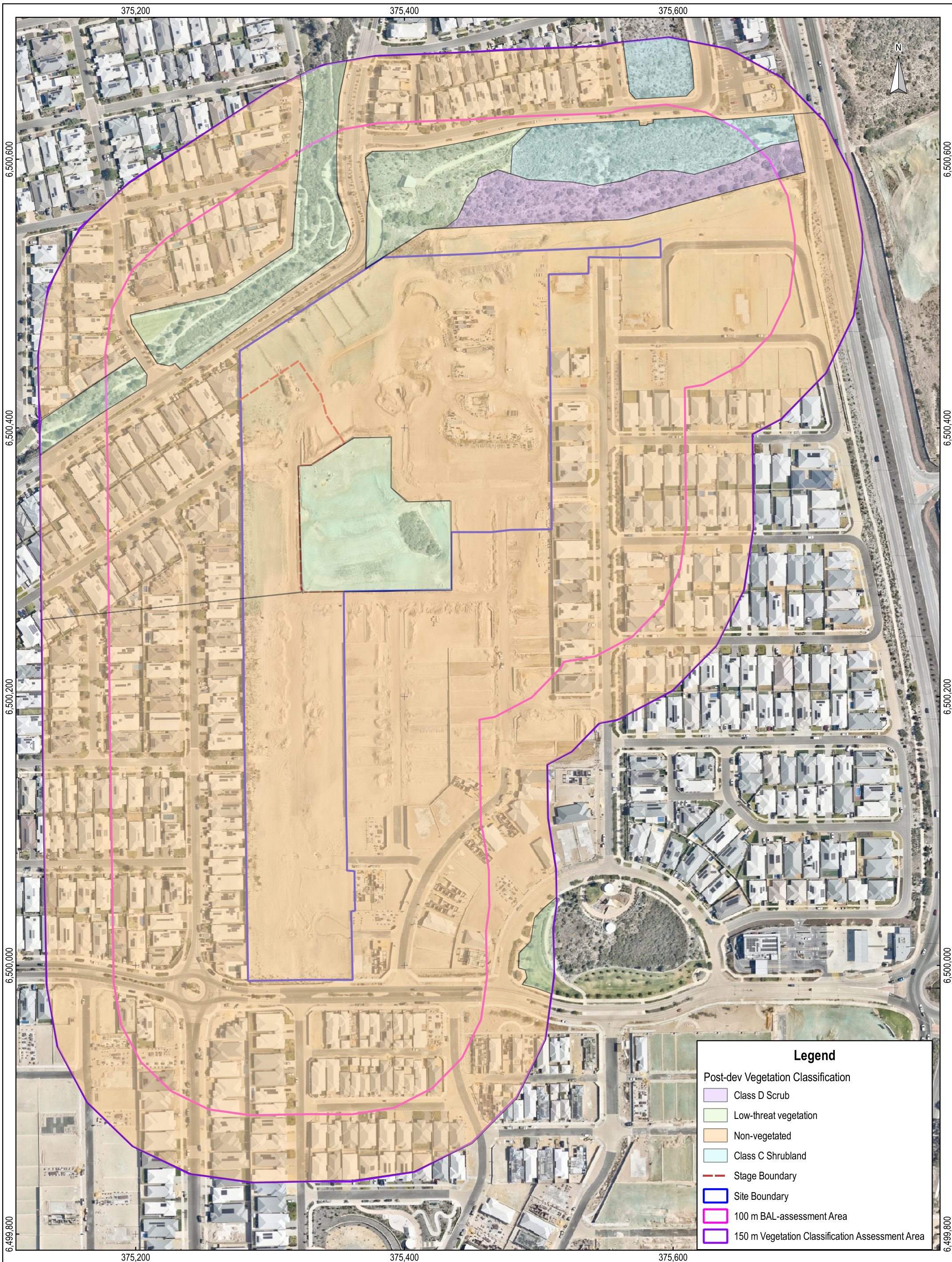
Figure 9: Non-vegetated Areas



Scale: 1: 2,500
 Original Size: A3
 Aerial Imagery: NearMap December 2024
 Grid: GDA94 / MGA zone 50 (EPSG:28350)

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Figure 10
Pre-development Vegetation Classification



Scale: 1: 2,500
 Original Size: A3
 Aerial Imagery: NearMap December 2024
 Grid: GDA94 / MGA zone 50 (EPSG:28350)

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Figure 11

Post-development Vegetation Classification

3.4 Fire Danger Index (FDI)

The Fire Danger Index for this site is FDI 80, as documented in Table 2.4.3 of *AS 3959:2018* and which is the nominated FDI for Western Australia.

3.5 Potential Bushfire Impacts

Potential bushfire impacts within the Site include smoke, ember attack, and radiant heat, with the BAL-analysis provided in Table 2.

Table 2: BAL-analysis

Patch	Vegetation Class	Slope	Separation Distance (m)	Maximum BAL-rating
1	Class D Scrub	Upslope	> 20	BAL-19
2	Class C Shrubland	Upslope	> 45	BAL-12.5
3	Low Threat Vegetation	N/A	N/A	BAL-Low
4	Non-vegetated areas	N/A	N/A	BAL-Low

3.6 BAL-Assessment

BAL-ratings for the proposed Lots have been determined (Figure 12). Note that BAL-ratings have been assigned based on a particular BAL-contour extending into a Lot boundary, with no consideration of the distance it extends. It is possible that several Lots may have the assigned BAL-rating reduced to a lower rating depending on the ability to apply a building setback from the northern Lot boundary such that construction of the proposed dwelling avoids the higher BAL-contour.

The BAL-assessment process indicates:

- Lots 12 – 38, 56 – 61, and 64 – 124 will be rated **BAL-Low**
- Lots 5 – 9, 39 – 45, 49 – 51, 53 – 55, and 62 – 63 will be rated **BAL-12.5**
- Lots 10 and 11 are currently assigned a **BAL-12.5** rating, however, if the dwelling is constructed a minimum of 3 and 3.5 m respectively from the rear Lot boundary, a **BAL-Low** rating will apply
- Lots 1 – 4, 46 – 48 will be rated **BAL-19**.
- Lot 52 is currently rated **BAL-19**, however, if the dwelling is constructed a minimum of 3.5 m from the front boundary, a **BAL-12.5** rating will apply
- No Lots will be rated BAL-FZ, BAL-40, or BAL-29.

3.7 Asset Protection Zone

The Asset Protection Zone (APZ) for the Site is the area that provides the separation distance between the edge of the classified vegetation and building walls, with the preferred width of the APZ being 100 m. For locations where a 100 m APZ width cannot be achieved, a reduced APZ can be implemented when a BAL-rating is determined for the building, as is the case for some of the Lots that are the subject of this BMP.

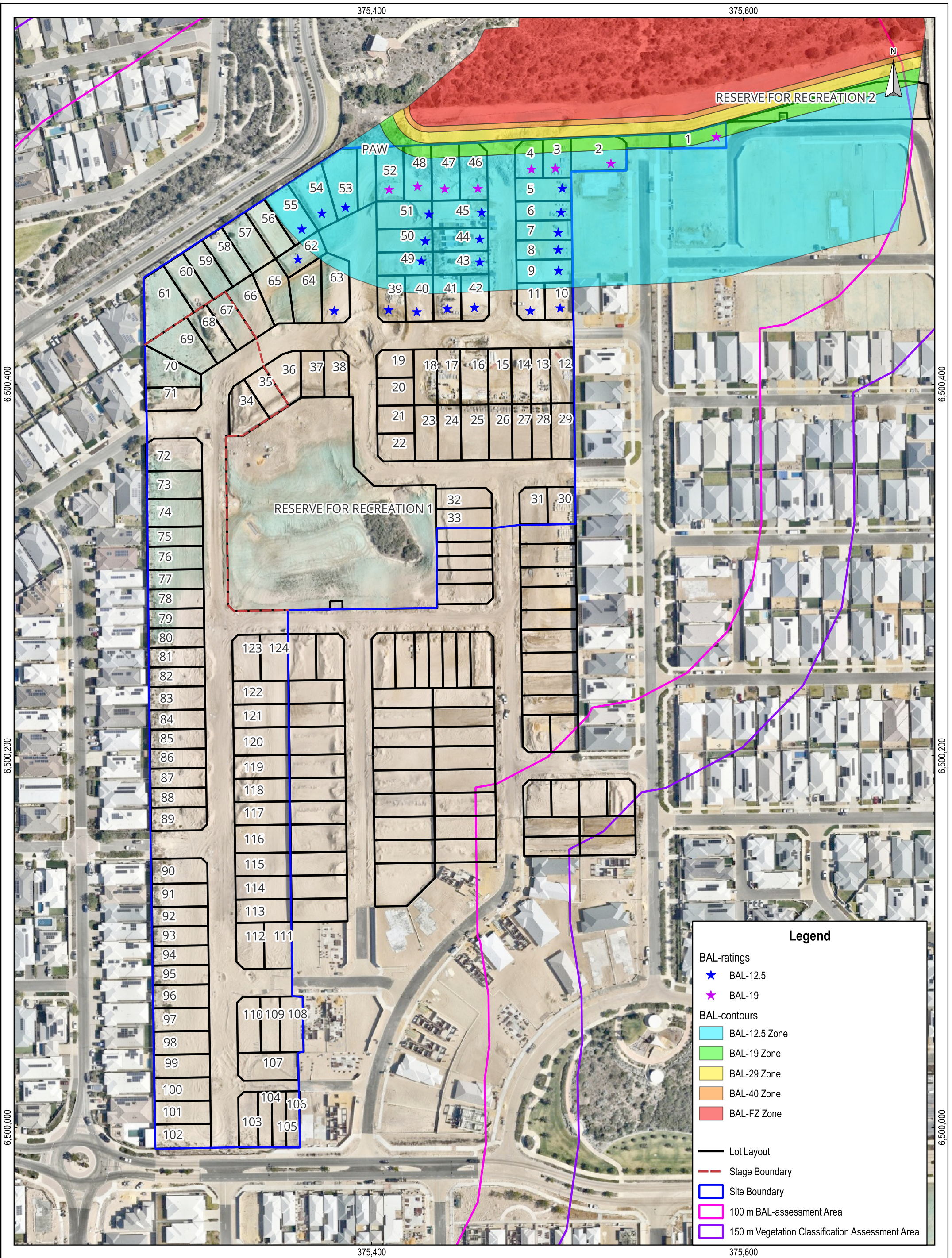
The reduced APZ commences at the junction of the BAL-40 and BAL-29 zones, or the junction of the orange and yellow zones shown in Figure 12, and will extend to the building walls which is the point where the potential radiant heat impact of a bushfire does not exceed 29 kW/m². As Figure 12 demonstrates that a suitable separation distance can be achieved for all Lots that will be created in Stages 38 and 39, it indicates that the bushfire risk can be effectively managed.

3.8 Shielding

Clause 3.5 of *AS 3959:2018* allows for a reduction in the nominated construction standard for a building in a bushfire prone area where the elevation is not exposed to the source of the bushfire attack, noting that the reduction in building standard cannot reduce below BAL-12.5. For those Lots rated BAL-19, the shielding provisions may be applicable.

3.9 Other Bushfire Protection Measures

No other bushfire protection measures are required for the Site other than those documented in this BMP.



Scale: 1:1,800
 Original Size: A3
 Aerial Imagery: NearMap December 2024
 Grid: GDA94 / MGA zone 50 (EPSG:28350)

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Figure 12
BAL-contours and Ratings

4. Assessment Against Bushfire Protection Criteria

Appendix B of the *Guidelines* (DPLH and WAPC, 2024a) provides details of the acceptable bushfire protection solutions that can be used to demonstrate how a location can be developed in bushfire prone areas.

4.1 Compliance Table

The compliance table focuses on ensuring that the subdivision design complies with Element 2: Siting and Design, Element 3: Vehicular Access, and Element 4: Water. Outcomes of how the Site will comply are provided in Table 3 with all compliance requirements able to be achieved.

Table 3: Compliance Table

Bushfire Protection Criteria	Method of Compliance – Method 1		Proposed Bushfire Management Strategies
	Acceptable Solutions		
Element 1: Location	A1.1a	Broader Landscape Type A	BLA outcome as described in Section 3.1 indicates that the Site is a Broader Landscape Type A and is compliant with Element 1: Location.
Element 2: Siting and Design	A2.1	Siting and Design	The current assessment processes indicated a bushfire hazard level of moderate or low, with no Lot being assigned a BAL-rating higher than BAL-19 (Figure 12), thus less than 29 kW/m ² , and which is an acceptable solution to demonstrate that the risk of bushfire can be effectively managed.
	A2.2	Asset Protection Zone	Not applicable as a suitable APZ can be demonstrated with no Lot having a BAL-rating higher than BAL-19 (Figure 12).
	A2.3	Clearing of Native Vegetation	Not applicable as Stages 38 and 39 have been cleared of all vegetation (Figure 2, Figure 10).

Bushfire Protection Criteria	Method of Compliance – Method 1		Proposed Bushfire Management Strategies
	Acceptable Solutions		
Element 3: Vehicular Access	A3.1	Public Roads	Public roads associated Stages 38 and 39 will be constructed in accordance with the technical requirements outlined in Column 2, Area 1 of Table 10 on page 103 of the <i>Guidelines</i> and be consistent with those constructed during the development of earlier subdivision stages to the east, west and south. Howden Pde to the north will be a perimeter road between Montana Park and Stage 39. As civil engineering works are in progress, the road design would have been approved by the City of Wanneroo prior to construction commencing.
	A3.2	Access Roads	Access and egress from the subdivision is available to at least two different destinations, with north/south and east/west access options via the planned road network that will connect to Chateau Ave, Hapsburg Ave, Hawksbill Dr, and Marmion Ave, for example (Figure 1, Figure 12).
	A3.3a	No-through Roads	Road 4 in the northwestern portion of the Site will be a cul-de-sac due to the constraints associated with the proposed intersection of Howden Pde and Leatherback Bvd (Figure 1).
	A3.3b	No-through Road Requirements	As the BLA indicates that the Site is a Broader Landscape Type A and is compliant with Element 1: Location, there is no prescribed maximum length for a no-through road.

Bushfire Protection Criteria	Method of Compliance – Method 1		Proposed Bushfire Management Strategies
	Acceptable Solutions		
	A3.4	Emergency Access Ways	N/A – access will be the existing and planned road network.
	A3.5a	Perimeter Roads	Howden Pde will act as a perimeter road between Stage 39 and Montana Park to the north (Figure 1, Figure 12).
	A3.5b	Fire Service Access Routes	N/A – fire service access requirements will be via the planned road network.
	A3.6	Battle-axe Access Leg	N/A – there are no battle-axe Lots planned.
Element 4: Water	A4.1	Water Supply for Structure Plans	N/A – Development application.
	A4.2	Water Supply for subdivision applications	The Site is in an area where a reticulated water supply will be available. The water supply and hydrant design would have undergone review and endorsement by the Water Corporation prior to construction commencing.
	A4.3	Water Supply for existing Habitable Buildings	N/A – Development application

4.2 Bushfire Mitigation Measures

Required bushfire mitigation measures that will be implemented and maintained by the Developer until the Site is developed, lots sold, and POS areas are ceded to the City of Wanneroo are provided in Table 4. Also provided are an indication of the responsibilities of future lot and landowners and the maintenance requirements associated with the various responsibilities.

Table 4: Bushfire Mitigation Measures

Item	Mitigation Measure	Maintenance
Landowner/Developer Prior to Sale or Occupancy		
1	When development of the Site progresses, where possible, a 100 m low-fuel zone (APZ) will be installed around active stages to prevent temporary BAL-ratings being applied to Lots under construction.	Ongoing as required until Lots are sold and POS areas ceded to the City of Wanneroo.
2	If required, bushfire implications are reviewed for subdivision if there is a change in the area (m ²) of classified vegetation to be cleared or retained.	As required.
3	Hydrant design requirements will be in accordance with the Water Corporation Design Standard 63 for hydrants: <ul style="list-style-type: none"> ▪ installation of markings to indicate the presence of hydrants ▪ clearance on the placement of hydrants is required from the Water Corporation ▪ hydrants to be clearly identifiable, with markings installed by the developer after practical completion. 	As required during various future planning approval phases.
4	Public roads will be constructed in accordance with the technical requirements outlined in Column 2, Area 1 of Table 10 on page 103 of the Guidelines and be consistent with those constructed during the development of earlier subdivision stages. Road design will be approved by the City of Wanneroo prior to construction commencing.	As required during various future planning approval phases.
5	POS designs will be consistent with Exclusion Clause 2.2.3.2 (f) of <i>AS 3959:2018</i> , with design reviewed and approved by the City of Wanneroo prior to installation.	Prior to installation commencing.
6	Comply with the City of Wanneroo's annual fire hazard reduction notice.	As per the requirements of the City of Wanneroo annual fire hazard reduction notice.

Item	Mitigation Measure	Maintenance	
7	Prepare a BMP compliance report to demonstrate that the relevant bushfire management measures have been implemented during subdivisional works to deliver compliance.	As required at each appropriate planning stage.	
Developer – Prior to Issue of Certificate of Titles for New Lots			
No.	Implementation Action	Local Government or other Clearance	Bushfire Consultant Clearance
1	Clearing of vegetation to create the APZ to be undertaken in accordance with the BMP.		✓
2	If there is a change in classified vegetation to be cleared or retained, bushfire implications are reviewed.		✓
3	Hydrant and water supply is in accordance with Water Corporation requirements.	✓	✓
4	Construct the public roads to the standards stated in the BMP.	✓	✓
5	POS designs are consistent with Exclusion Clause 2.2.3.2 (f) of AS 3959.	✓	✓
6	Comply with the City of Wanneroo annual fire hazard reduction notice.	✓	✓
7	Preparation of BMP compliance report		✓

5. References

AS 3959:2018 Construction of Buildings in Bushfire-Prone Areas, (2018), Standards Australia, New South Wales.

Bush Fires Act 1954 (WA)

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